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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/918,532
Filing Date: August 01, 2001
Appellant(s): YAMAMOTO ET AL.

Jennifer M. Hayes
For Appellant

EXAMINER'S ANSWER

MAILED
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This is in response to the appeal brief filed July 12, 2004.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

The rejection of claims 1, 2, 6, 7, 11 and 12 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

| | | |
|-----------|-------------|---------|
| 6,224,938 | Bamba et al | 05-2001 |
|-----------|-------------|---------|

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

(a) Claims 1, 2, 6, 7, 11 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

(b) Claims 1, 2, 6, 7, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(c) Claims 1, 2, 6, 7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bamba et al (U.S. 6,224,938). This rejection is set forth in a prior Office Action, mailed on 11/25/2003.

(a) Claims 1, 2, 6, 7, 11 and 12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed

invention. The introduction of “**molecular weight**” in the amendment filed February 4, 2003, instead of previously disclosed “**weight average molecular weight**” is not supported by **original specification** before it was amended. The instant specification clearly provides for the **weight average molecular weight** (see pages 4 and 10 of the instant specification). The instant specification NEVER mentions or provides any guidance for the term “molecular weight”, nor does the instant specification provides the methods of determination of molecular weight. This is a new matter situation.

In addition, the amendment to Specification filed February 4, 2003 **is objected to under 35 U.S.C. 132** because **it introduces new matter into the disclosure**. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material, which is not supported by the original disclosure is as follows: “**molecular weight**” versus “**weight average molecular weight**” as initially presented.

Applicant was required to cancel the new matter in the reply to the Office Action.

(b) Claims 1, 2, 6, 7, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The molecular weight limitation of 100,000 or less set forth in claims 1, 2, 6, 7, 11 and 12 fails to identify whether this numerical value represents a **weight average**

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molecular weight or a **number average** molecular weight or **viscosity average** molecular weight.

Therefore, claims 1, 2, 6, 7, 11 and 12 do not set out and circumscribe a particular area with a reasonable degree of precision and particularity.

It is imperative that the type of molecular weight be identified, since it is well known **that molecular weight of a particular polymer yield significantly different "number average", and "weight average" numerical values**, see Ex parte Simpson, 61 USPQ2d 1009 (BdPatApp&Int 2001), which deals with the issues of indefiniteness of molecular weight recitation, and an opinion based declaration. The headnote reads as follows: Patent examiner's decision to reject applicants' patent claims, directed to blend of linear low density polyethylene and high density polyethylene, for failure to adequately define term "molecular weight" is affirmed, even though applicants submitted declaration of inventor indicating that persons of ordinary skill in art would realize that "weight average molecular weight" was intended, since molecular weight can be measured in several different ways, since Manual of Patent Examining Procedure states that factual testimony is preferred over opinion testimony, since inventor's opinion is not supported by adequate documentation in record, and since applicants, therefore, have failed to establish that examiner erred in declining to accord inventor's testimony controlling weight; examiner's finding that inventor's opinion was "self-serving" relates to inventor's interest in outcome of case, which examiner was entitled to factor into analysis, and such finding should not be read as questioning inventor's good faith.

(c) Claims 1, 2, 6, 7, 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bamba et al (U.S. 6,224,938)

Bamba discloses a method for producing **pressure sensitive adhesive**, said method comprising subjecting a mixture of monomers to be polymerized to polymerization in an inert fluid in a supercritical state (abstract). Examples of monomers to be polymerized include **acrylic acid monomers**, listed in col. 2, lines 46-51 and others listed in col. 2, lines 53-65. Polymerization is performed in the presence of **conventional free radical initiators** (col. 3, lines 5-11). Preferable supercritical fluid is named as **carbon dioxide** in col. 3, line 17. Polymerization temperature is from **20-100°C**. **Continuous process** of polymerization is described in col. 4, lines 35-50.

With regard to the limitation of the instant claim that 10% or less based on the total weight of the total monomers of components having a molecular weight of 100,000 or less it is noted that the limitation 10% or less reads on the total absence of such components. With this in mind, according to the method of Bamba's invention, by ejecting the pressure-sensitive adhesive to a low-pressure region, **the residual monomer and lower molecular weight components**, can **be evaporated off** (col.5, line 2), which means can be completely removed. Therefore, the disclosure of Bamba in col. 4, line 65-67 through 5, lines 1-5 recites the embodiment wherein the low molecular weight component (Mw 100,000 or less) is completely removed.

The disclosure of Bamba differs from the instant claims by

- 1) by not disclosing that the polymerization apparatus is equipped with a line mixer, and
- 2) by not exemplifying polymerization time in for the **continuous** process.

With regard to apparatuses Bamba clearly suggests the continuous process in the extrusion apparatus, wherein the raw materials, such as monomer, initiator and inert fluid (supercritical carbon dioxide) are being pressurized and continuously supplied to the extrusion apparatus (col. 4, lines 35-40). Taking into account the breadth of "in line mixer", it encompasses the extrusion apparatus of Bamba, and the mixing of components in an extrusion apparatus is substantially similar and encompass to mixing the monomer solution and carbon dioxide in the joint mixer as per instant claims.

Furthermore, it is noted here that it is noted that the claimed invention calls for **the process claims**, wherein the steps of the process are met by the applied prior art, and the structural limitations of apparatus do not present manipulative difference between the claimed process steps and the prior art process. Therefore, the recitation of specific structural limitations of apparatus for performing such steps does not serve to limit the claim.

With regard to the difference in the residence time, it is well known in the art that **time** and temperature, for example, are those parameters, which are conventionally adjusted to achieve the optimum of molecular weight (by reducing or increasing chain transfer reactions), polydispersity, residual monomer content. Bamba, for example, provides a motivation to a person skilled in the art take measures to reduce residual

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monomer content, such as ejecting the pressure-sensitive adhesive to a low-pressure region, to evaporate the residual monomer and low molecular weight components, which have a possibility to lower the pressure-sensitive adhesive properties. Bamba further suggests that in his process, the heat drying step can be omitted by properly choosing the parameters of the process (col.4, lines 59-63, 65-67, col.5, lines 1-5)

Therefore, a person skilled in the art would have found it obvious to adjust the reaction time, (which is a result effective parameter, as explained above), depending on the desired balance of polydispersity, weight average or number average molecular weights of resulting polymers, and thus to arrive at the instant claims.

Discovery of optimum value of a result effective variable in known process is within the skills of one with ordinary skill in the art and would have been obvious, *In re Boesch and Slaney* 205 USPQ 215 (CCPA 1980).

(11) Response to Argument

Applicants arguments in Brief filed July 12, 2004 are not persuasive for the reasons below:

A: The term "molecular weigh of 100,000" has no literal support in the original specification, and thus constitute a new matter.

The entire Appellants' argument with regard to the rejection under 112, first paragraph on a new matter situation resides in contention that the term "**molecular**

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weight" has literal support. Applicants recited number of pages wherein such term appears per se.

However, on pages noted by Appellants (page 6, lines 15 and 16, page 8, lines 18-20) NUMERICAL values of 100,000 do not appear. To the contrary, the referenced pages discussed the reduction of low molecular weight component, wherein the instant specification **as originally filed** clearly presented the following: "The proportion of components having an **Mw of 100,000** (*Mw stands for weight average molecular weight-T.Z.*) or less was 2.99% as measured from the molecular weight distribution curve" (see page 11, lines 1, 2). On page 10, of the Brief in first paragraph Appellants contradict themselves by stating that the weight average molecular weight of 1,020,000 is identified. **All specific Examples of Appellants'** specification EXPRESSLY provide **Mw of 100,000 or less**.

Further in their arguments Appellants state that it does not make any sense for the example to subsequently refer to the specific components thereof as having a weight average molecular weight of 100,000 or less, and that "one skilled in the art would recognize that the components are discussed in terms of their **actual** (emphasis added-T.Z.) molecular weight" (see Brief, page 10, first paragraph). It is noted that there is NO such term in the art as ACTUAL molecular weight. If Appellants are aware of any art or other source that defines ACTUAL molecular weight for polymers, they are requested to provide such reference.

Appellants further refer to the term "molecular weight" that is allegedly consistent with the use of such term in original specification. This is not found persuasive because as shown above the instant specification provides expressly for "the specific components thereof as having a weight average molecular weight of 100,000 or less" (page 11, lines 1 and 2 of the instant specification). Also, Examples 1, 2 on pages 10, 11, provide for the Mw of 100,000 or less, as well as Example 3, page 11, line 27 provides for Mw of 100,000 or less, and therefore, the limitations that appeared in the instant claims 1 and 2 refers to the **weight average** molecular weight, not to "actual" molecular weight.

Resuming the above, the paragraph of specification as originally filed "***The acrylic pressure-sensitive adhesive comprises preferably 10% by weight or less, more preferably 6.5% by weight, based on the weight of the total monomers, of components having a weight average molecular weight of 100,000 or less***" does ***have literal*** support throughout the entire specification, ***while removing the term "weight average"*** in the amendment filed 02/04/2003 introduces new matter in the specification. And the amended claims containing the clause "molecular weight" instead of initially filed "weight average molecular weight" have been properly rejected under 35 U.S.C. 112, first paragraph, as not supported by the original disclosure.

Appellants state that the amendment was made to correct the "inadvertent, obvious error in certain locations" (see Brief, page 12 beginning of the bottom paragraph). During telephone conversation with Applicants representative, Mr. Scala

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after the amendment was filed, Mr. Scala noted that the new limitation of "molecular weight" instead of initially recited "weight average molecular weight" is derived from a priority Japanese Application, and that allegedly the error was made during translation. Even if this is the case (**although the certified translation has never been submitted**), there is no mentioning in initial filing that the Japanese Application is incorporated by reference in its entirety in the present Application. Therefore, the new limitation still introduces the new matter. The proscription against the introduction of new matter in a patent application (35 U.S.C. 132 and 251) serves to prevent an applicant from adding information that goes beyond the subject matter originally filed. See *In re Rasmussen*, 650 F.2d 1212, 1214, 211 USPQ 323, 326 (CCPA 1981). Where a foreign priority document under 35 U.S.C. 119 is of record in the U.S. application file, applicant may **not rely on the disclosure of that document to support** correction of an error in the pending U.S. application. *Ex parte Bondiou*, 132 USPQ 356 (Bd. App. 1961). This prohibition applies regardless of the language of the foreign priority documents because a claim for priority is simply a claim for the benefit of an earlier filing date for subject matter that is common to two or more applications, and does not serve to incorporate the content of the priority document in the application in which the claim for priority is made. This prohibition does not apply where the U.S. application explicitly incorporates the foreign priority document by reference. See MPEP 2163.06

B: The term "molecular weight" is indefinite.

The crux of Appellants' arguments with regard to rejection under 35 U.S.C. 112, second paragraph, appears to hinge on the number of ***citations, taken out of context***, that recite the term "molecular weight" without referring to the weight average or number average molecular weight. Taken, for example, passage from Grant & Hackh's Chemical Dictionary, the molecular weight of 375 (see Brief, page 13, first paragraph) is a poor example to support the "molecular weight" for ***polymers***. This definition is referred ONLY and solely to low molecular compounds, which is proven by the value of 375. Needless to say that other examples, provided by Appellants, such as methanol (M.W. 32 and ethanol, M.W. 46) (see Brief, page 13, bottom paragraph) just serve to completely support the Examiner's position that the molecular weight of low molecular compound is absolutely different from the molecular weight of polymers.

Appellants' further statements that GPC can be used to measure molecular weight "with respect to entire polymer", is incorrect. GPC is a solid-liquid elution chromatography that automatically separates solutions of polydisperse polymers into fractions and is used to measure the molecular weight distribution which is a ratio of M_w/M_n , and from there by measuring either one M_w or M_n by specific techniques, the other M_w or M_n respectively can be calculated.

Without referring to each and every citation of issued patents cited by Appellants, that use the term "molecular weight", Examiner would like to emphasize ***two factors***:

a) each and everyone of the Patents cited by Appellants recite the NUMERICAL VALUES that are either ***weight average or number average molecular weights***, while, for example U.S. 6,444,772 is not relevant at all to the instant situation because it discusses molecular weight for low molecular compounds (M.W. 116-297).

b) In order to support the Examiner's position, as well as the position held by the Courts, the reference pages from George Odian "PRINCIPLES OF POLYMERIZATION" textbook is provided as an appendix to the Examiner's Answer:

Some passages are: "When one speaks of the ***molecular weight of polymer, one means something quite different from which applies to small sized compounds***" and further, "...the various methods ***DO NOT*** yield the same average molecular weight. Different average molecular weights are obtained because the properties being measured are biased differently toward the different sized polymer molecules in a polymer sample", and last, but not least (see page 23) "More than one average molecular weight is required to reasonably characterize a polymer sample. There is no such need for a monodisperse product for which all three average molecular weight are the same (Mw, Mn and Mv)" All the above clearly supports the Examiner's position that in order to characterize a polymer sample with a NUMERICAL VALUE of molecular weight, one should clearly indicate what type of molecular weight is meant.

Appellants' next argument resides in contention that Ex parte Simpson cited by the Examiner "appears to favor Appellants' position", since the other patents citing the

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term "molecular weight" were presented by the Appellants to show that the "molecular weight" per se is art recognized term. This is not persuasive since it has been clarified by the Examiner several times that only if the molecular weight is characterized by numerical value this numerical value should be recognized as weight average, number average or viscosity average" molecular weight. It is once again submitted that all references (pertinent to polymer molecular weight) supplied by Appellants provide the numerical value of molecular weight that is defined either as weight average or number average molecular weight.

C: Arguments on the rejection of claims 1, 2, 6, 7 over Bamba. (U.S. 6,224,938).

There are two basic argument with regard to Bamba reference:

a) according to Appellants, "Bamba does not disclose or suggest the step of uniformly mixing a monomer mixture and an inert fluid and feeding the resultant mixture to a continuous reactor".

This issue is in details discussed in paragraph (10) of the instant communication, i.e. With regard to apparatuses Bamba clearly suggests the continuous process in the extrusion apparatus, wherein the raw materials, such as monomer, initiator and inert fluid (supercritical carbon dioxide) are being continuously pressurized (mixed) and continuously supplied to the extrusion apparatus and continuously ejected from the extruder(col. 4, lines 35-40). This is a continuous process, wherein the step of pressurizing and supplying the mixture of monomers and inert carbon dioxide is read

on mixing the monomer solution and carbon dioxide in the line mixer as per instant claims. Furthermore, considering the breadth of "line mixer" of the instant claims, it is noted that the extruder is very well encompassed by the "line mixture". It is also noted that the extruder as mixing/polymerizing device is exemplified in Appellants' disclosure as preferred device. (page 7, lines 15, 16)

Furthermore, it is noted here that the claimed invention calls for ***the process claims***, wherein the steps of the process are met by the applied prior art, and the structural limitations of apparatus do not present manipulative difference between the claimed process steps and the prior art process. Therefore, the recitation of specific structural limitations of apparatus for performing such steps does not serve to limit the claim.

b) according to Appellants, in order to recognize prima facie obviousness of optimization of a parameter of the process, such parameter should be recognized as a result effective variable. Examiner agrees with this position, and therefore did provide the statements why the time of reaction (residence time) is a result effective variable (see paragraph 10 of the present communication).

Time and temperature of chemical reactions are known result effective variable (remember for instance Arrhenius equation and/or dependence of conversion of monomers into polymers on residence time) and ***are*** those parameters, which are

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conventionally adjusted to achieve the optimum of molecular weight (by reducing or increasing chain transfer reactions), polydispersity, residual monomer content.

Bamba, for example, motivates a person skilled in the art ***take measures*** to reduce residual monomer content, such as ejecting the pressure-sensitive adhesive to a low-pressure region, to evaporate the residual monomer and low molecular weight components, which have a possibility to lower the pressure-sensitive adhesive properties.

Therefore, a person skilled in the art would have found it obvious to adjust the reaction time, (which is a result effective parameter, as explained above), depending on the desired balance of polydispersity, weight average or number average molecular weights of resulting polymers, and thus to arrive at the instant claims. Discovery of optimum value of a result effective variable in known process is within the skills of one with ordinary skill in the art and would have been obvious, it has been held that a result oriented variable implemented within the skill of the art to solve a known problem in a known process is obvious absent the showing of a new or unexpected result, ***In re Boesch and Slaney*** 205 USPQ 215 (CCPA 1980).

Next Applicants argument is that Bamba does not disclose pressure sensitive adhesive comprising 10% or less based on the weight of total polymers of components having molecular weight of 100,000 or less.

In response to this it is noted that employing Examiner's duty to police the claim language by giving it the broadest possible interpretation", (Sprints Window Fashions LP v. Novo Industries L.P., 65, USPQ 2d 1826, 1830 (Fed. Cir. 2003), the limitation 10% by weight or less is understood that 0% (none at all) of the polymers have the (?) molecular weight of 100, 000 or less is incorporated in this limitation. In this regard Bamba teaches that according to the inventive process, by ejecting the pressure-sensitive adhesive to a low-pressure region, the **low molecular weight components**, ***are evaporated off*** simultaneously with the evaporation of the inert fluid (col.5, lines 1-5). Thus the low molecular weight components are virtually not present in this embodiment of the process of Bamba. It is noted that Applicants in their specification name the components "having molecular weight of 1000,000 or less" as low molecular weight components.

With regard to Appellants arguments that the temperature of the instantly claimed process is not disclosed by Bamba, it is respectfully submitted that each Bamba's Example (1,2,3) and generic teaching of temperature (col.3, line 34) recites the temperature that is a specific data point within the claimed range.

Resuming the above, it is also noted that during the prosecution history, Appellants have never shown either the criticality of the claimed residence time for the outcome of the claimed process, nor have they presented the experimental (or other evidence) that

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the pressure sensitive adhesives obtained by the instantly claimed process are different from those obtained by the process of Bamba.

For the above reasons, it is believed that the rejections should be sustained.

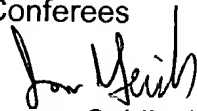

Respectfully submitted,

Tatyana Zalukaeva
Primary Examiner
Art Unit 1713



September 28, 2004

Conferees


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Appendix:

Published evidence presented by the Examiner to prove that the molecular weight should be defined as "weight" or "number" or "viscosity" in order to be definite.

"Principles of Polymerization", second edition

George Odian

A Wiley-Interscience Publication JOHN WILEY & SONS, 1981, PAGES 20-25.